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Margaret Inman Linn, Joan F. Goodman and Winifred Lloyds Lender

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MARGARET INMAN LINN
Widener University

JOAN F. GOODMAN
University of Pennsylvania

WINIFRED LLOYDS LENDER
Santa Barbara, California

Young children with Down syndrome are characterized as both cognitively and behaviorally passive. Parents and educators often view passive behavior as a failure to initiate or to sustain involvement. As a result, they often interrupt such behaviors and redirect the child's activity. An opportunity for the child to express initiative might be lost. What would happen if there were no adult interruptions? This study investigates the duration, frequency, and trajectory of passive behavior in a sample of 14 children with Down syndrome and 14 typically developing children, matched for mental age, race, and gender, over a 47-minute independent play session. Passive episodes were coded for point of occurrence in the play session. In our sample, children with Down syndrome exhibited more time in passive behavior than their typically developing counterparts did. For some children with Down syndrome, passivity increased commensurate with time spent in the play session. Implications from these findings for both research and practice are given.

In recent years we have come to appreciate the close parallels in the development of children with and without mental retardation (Beeghly, Weiss-Perry, & Cicchetti, 1990; Hale & Borkowski, 1991). It has been established that in most areas children with mental retardation reach milestones in the same sequence and at comparable levels as their typically developing mental-age-matched peers: sensori-motor skills (Cicchetti & Mans-Wagener, 1987), language (Beeghly, Weiss-Perry, & Cicchetti, 1990), self-recognition (Mans, Cicchetti, & Sroufe, 1978), affect (Cicchetti & Sroufe, 1976), play (Hill & McCune-Nicolich, 1981; Motti, Cicchetti, & Sroufe, 1983), and use of materials (File, 1994).

Despite these similarities, specific behaviors distinguish children with mental retardation from typically developing children at similar stages of development. Passivity, or disengagement from activity, is a distinguishing behavioral characteristic. It has been widely noted that children with mental retardation appear cognitively and behaviorally passive or unengaged (Gibson, 1991; Richard, 1986). Passivity is a complex phenomenon caused by the interaction of neurological and environmental factors. Researchers have posited a range of factors contributing to passivity in the child with mental retardation: a depletion of cognitive and attentional resources (Pascual-Leone, 1976), low arousal levels (Emde, Katz, & Thorpe, 1978), delayed motor development (Jobling & Gunn, 1995), a detrimental

learning style that appears to increase with age (Wishart, 1996), the directive interactive style associated with parents of children with mental retardation (Cherkes-Julkowski & Gertner, 1989), and the lack of initiative-building activities in educational and interpersonal interactions (Hanson, 1987).

Regardless of etiology, passivity in the preschool child with developmental delays affects when and how educators intervene. It has been hypothesized that children with Down syndrome might be less generative and more likely to drift into self-absorbed passive behavior than typically developing children are at parallel developmental stages, given an unstructured learning opportunity such as free play (Gibson, 1991; Hanson, 1987). Teachers and parents are naturally concerned about the relationship between unstructured activity and passive behavior, especially in light of recent research emphasizing the importance of independent, self-directed learning (Biemiller & Meichenbaum, 1992; Zimmerman & Schunk, 1989). Many educators believe that children with developmental delays do not use unstructured time productively and, if left to their own devices, might begin an irrevocable cycle of passive, self-absorbed behavior. Passivity is considered an impediment to progress; the child is wasting valuable time crucial for potential learning. Adults tend to intervene at the first sign of a drift from productivity and direct the child to a new activity or restructure an existing one (Carta, Schwartz, Atwater, & McConnell, 1991; Jobling, 1996). As a result of insensitive intervention, the self-directed activity is now teacher controlled (Goodman, 1992).

Free play is a ''primary medium for learning in developmentally appropriate early childhood settings'' (Kontos, Moore, & Giorgetti, 1998, p. 38). This emphasis on the importance of free play for the development of all children has resulted in a focus on unstructured play in inclusive classrooms, yet little is known about the relationship between passivity and unstructured play in children with mental retardation. In a recent review of the play of young children with Down syndrome, Jobling (1996) posited that environmental factors (intense adult intervention; the repetitive, sedentary nature of many early intervention activities) and biological factors (hypotonia, delayed motor skill development) interact to help shape a system predisposed to passivity. We assert that a complete understanding of the function of passivity in nondirected play also requires consideration of the cognitive and attentional demands play places on the child with mental retardation.

As with many areas of development, the course and content of play is similar in children with and without Down syndrome (Cicchetti & Ganiban, 1990; Hill & McCune-Nicolich, 1981). At each developmental stage, however, there might be qualitative differences, specifically in the deployment of attention during play (Krakow & Kopp, 1983; Ruskin, Kasari, Mundy, & Sigman, 1994) and in the subsequent cognitive and affective engagement of children with Down syndrome (Landry & Chapieski, 1990; Sigman & Ruskin, 1999). In their frequently cited studies of attention and play, Krakow and Kopp (1982, 1983) presented evidence indicating that the attention of children with Down syndrome is more focused and less fluent during play when compared to the attention of typically developing children. This narrow focus results in fewer glances to their caregiver (i.e., less emotional contact with the mother) and less involvement with the environment. These differences in attention, combined with differences in cognitive engagement, suggest that play might not hold the same meaning for children with and without Down syndrome.

In addition to qualitative differences in play, children with Down syndrome spent more time in periods of ''no play'' or ''unoccupied'' (Krakow & Kopp, 1982, 1983), whereas typically developing children spent more time engaged in social behaviors during periods of nonplay. Krakow and Kopp (1983) concluded that, along with other factors (less monitoring of the environment, more primitive play behavior), the preponderance of ''time spent unoccupied'' indicates that children with Down syndrome might have ''systematic problems in processing stimuli and taking full advantage of the experience at

hand'' (p. 1153). As a result of Krakow and Kopp's work, we now know that the narrow focus maintained by children with Down syndrome results in less efficient use of the environment to support and enrich play, and reduced opportunities for incidental learning. We do not yet know, however, what purpose nonplay serves. Thus, as with the meaning of play, nonplay, and reaching the state of being played out might not be the same for all children.

The research of Krakow and Kopp (1982, 1983) explores attention in young children with and without Down syndrome during a time-limited play situation (16 minutes, divided into 2 segments). They did not, however, examine the pattern of attention and inattention emerging over the course of that session. In addition, children in the Krakow and Kopp (1983) study were brought back to play after 30 seconds of nonplay, thus interrupting the natural rhythm of play and nonplay. Thus, despite its importance for early intervention, we have little knowledge of the effect of extended time and no adult intervention on the attention of young children with developmental delays during free play. No study has yet examined the trajectory of passivity over an extended period of play. We believe that to understand functioning in this more common and wider time context, the child must be allowed to interact long enough to reach the state of being ''played out,'' regardless of the meaning this state holds for the child. In addition, examination of the child's ability to reengage following a bout of passivity requires waiting out the passive behavior. This study begins the investigation of the time pattern of passivity in a controlled, standardized setting.

The data for this report were collected as part of the Preschool Play Project, a larger study of the unstructured play of children with Down syndrome. A principle goal of this project was to investigate how children with Down syndrome performed without the typical constraints of time and adult directives. Children in this study were allowed to play however they wished for as long as they wished (up to 60 minutes). We assessed differences displayed by young children with and without Down syndrome in a play period similar in duration to a free play situation at school, thus testing the 30- to 50-minute free play time limits recommended for children with developmental delays (Rettig, 1998) and for typically developing preschool children (Ward, 1996). We feel that information about functioning in a realistic time context is especially important for educators responsible for supporting children with developmental delays in inclusive preschool settings.

Although ideally done in an educational setting, standardizing independent play in a classroom is complex. As a first analysis, we chose to study a setting where the child had the choice to be active or inactive, where inactivity was not redirected but allowed to run its course, and where the child was observed for an extended period to allow for the natural occurrence of the rhythm of activity and inactivity. Our experimental design allows for a detailed examination of the activity, inactivity, and shifts of attention during a single, uninterrupted, child-directed period of play. Results of the study of one aspect of play behavior, repetitive activity, have been presented previously (Lender, Goodman, & Linn, 1998), and will be discussed in relation to the findings of nonplay behavior presented here.

This study presents an in-depth analysis of nonplay behavior, specifically passivity, in young children with Down syndrome. We address two questions of importance to the study of passivity in young children with mental retardation. First, in an extended free play situation, will children with Down syndrome display more passivity than typically developing children at the same developmental stage? Second, do the duration and frequency of passivity increase over the play period? We believe that understanding the trajectory of passivity over this wider time context can be essential to determining when and how to intervene.

METHOD

Participants

Participants were 28 children: 14 with Down syndrome and 14 typically developing chil-

Table 1.
Age and Demographic Characteristics of Sample

	Down Syndrome (n = 14)		Typically Developing (n = 14)	
	M	*SD*	*M*	*SD*
Developmental age (months)	29.10	5.50	28.70	6.00
Chronological age (months)	54.00	7.10	26.20	5.80
Developmental quotient	53.50	6.69	110.10	10.03
Maternal level of education[a]	2.29	1.07	3.14	1.03

[a]Education scale: 1 = high school, 2 = some college, 3 = B.A., 4 = beyond B.A.

dren, equally divided by sex (7 girls and 7 boys in each group). Eligibility criteria consisted of (a) a developmental age between 20 and 40 months, as assessed with the Mental Scales of the *Bayley Scales of Infant Development* (Bayley, 1993), and (b) the ability to sustain involvement in the play session for at least 30 minutes (remain in the play room and not indicate verbally or non-verbally the desire to terminate the session). All children were from Caucasian, English-speaking families and lived with at least one biological parent. Children with Down syndrome had an overall developmental quotient between 46 and 66, with a corresponding developmental age between 20 and 40 months. All children with Down syndrome had trisomy 21, and had some experience participating in early intervention programs. Children were recruited through Down Syndrome Interest Groups.

The group of typically developing children was recruited from child care centers in the Philadelphia area (for details of recruitment procedures see Lender, Goodman, & Linn, 1998). Selection criteria for this group included matching individual subjects with subjects from the group of children with Down syndrome on developmental age (± 2 months), sex, ethnicity, and mother's level of education. The differences between mean scores of developmental age for the two samples was not statistically significant ($p > .05$).

An attempt was made to match maternal level of education as closely as possible. Because the mean level of education for the mothers of the typically developing children was significantly higher than that for the mothers of the children with Down syndrome, regression analyses were performed relating each dependent variable, first to membership in the group (Down syndrome and typically developing children), and second to membership in the specific group *and* maternal level of education. Inclusion of maternal level of education had no statistically significant effect on the dependent variables. Specific information regarding chronological ages, developmental ages, and demographic information of both groups of children is presented in Table 1.

Procedure

A study of passive behavior in children with and without disabilities required a setting that controlled for extraneous variables that might influence the child's play. This meant ensuring that all space, materials, and adult responses were identical for all participants. To this end, every attempt was made to create a relaxed play situation for the children: toys were similar to those found in most preschools, mothers remained in the room while their children played, and a warm-up period familiarized the child with the setting and the researchers.

One researcher engaged the child with a bead-maze toy on the floor of the playroom during a 5-minute warm-up period. The second researcher reviewed the procedures with the mother: The mother could encourage the child to play in a non-directive way (e.g.,"You're doing a good job") but was not allowed to give specific suggestions, she should keep interactions to a minimum during the play session, and she should say she was busy if the child approached her.

Following the warm-up period, the bead

maze was removed from the room and the mother held her child on her lap while the toys were arranged in a standardized pattern on the floor. The materials were placed on the floor near the mother's chair to facilitate the transition for the child from mother to toys. The child was invited to play with the toys ''any way you want.'' Videotaping began when the child approached the toys.

The mother received a questionnaire to complete and a magazine to read during the play session. One researcher sat on the floor with the child and interacted when the child initiated action, but did not lead the child in any way. She provided the child with standardized reinforcement (e.g., if the child looked at the researcher for more than 10 seconds, in a bid for reassurance, she smiled and said, ''You're doing a good job''). If the child tried to engage the mother for more than 30 seconds, the first researcher encouraged the child with the words, ''Come play with the toys'' or ''Mommy's busy now. Come play.'' Otherwise, the child was permitted to play or not play, in any way she wished. If the child asked an adult to perform an activity (e.g., the child asked to be pulled in the wagon), she was told, ''You do it. I am just going to watch.'' The play session lasted from 30 to 60 minutes depending upon the child's involvement with the toys. Just as all play was child initiated, termination of the play session before the 60-minute limit was child initiated as well. The play session ended when the child indicated either verbally (e.g., ''all done'') or nonverbally (e.g., pointing to the door, trying to leave the playroom) that play was finished. For the purposes of this study, 47 minutes of the play session were analyzed. Following the completion of the play session, the child was administered the Mental Scale of the Bayley Scales of Infant Development (Bayley, 1993).

Materials

Toys. The standardized set of toys consisted of a crate of 50 wooden blocks of different shapes, a wagon large enough for a child to sit in, a small bucket, a dump truck, a tractor, 3 small human figures, 3 small animal figures, a doll with a diaper and shirt, a toy bottle, and a receiving blanket. Toys were selected based on (a) familiarity (i.e., it is likely that the children have experienced similar toys in either their home or preschool), (b) the extent to which children could use the toys to engage in a range of play behaviors from simple sensorimotor play to sequences of pretend play, and (c) the extent to which the toys could be combined to create more complex play themes.

Behavior coding. Each tape was reviewed individually by the researchers to identify (a) episode length, (b) type of episode (play, nonplay), and (c) passivity exhibited during nonplay episodes. The determination of episode length and type required the division of the play session into play and nonplay episodes. Identification of play episodes followed procedures established by McCune-Nicolich (1983). According to McCune-Nicolich (1983), a play episode is ''(a) a single object contact, or (b) continuous involvement with a group of objects that together form a 'theme' for the child. An episode begins when the child has nothing in hand and ends when the child is again empty-handed. The episode continues as long as (a) the original object remains in hand, or (b) a theme of action related to the original object continues'' (p. 8). It is possible for a child to engage in play with no objects (e.g., the child pours from an imaginary bottle into an imaginary cup and pretends to drink).

Periods the child was not engaged in play were considered nonplay episodes. Like play episodes, nonplay episodes ranged from a few seconds to more than 10 minutes. Nonplay behavior occurred at the beginning or end of the play session, or between play episodes, and was recorded as such. Some children, however, shifted their attention away from sustained play activity during an episode and then returned to the *same* play activity. If this shift of attention was less than 30 seconds and the child returned to the same activity, it was noted, but not considered a separate nonplay episode. If the child's attention shifted from the play activity for more than 30 seconds and then returned to the same activity, it was considered a nonplay episode. The division of the

Table 2.
Nonplay Coding Categories

Nonplay Category	Description	Example
Unengaged with toys: Exploration	Physical or visual examination of room, camera, furniture	Looks at or touches air from heating unit
Unengaged with toys: Social Behavior	Engages others in verbal or nonverbal interaction not related to play; child must initiate interaction	Physically touches mother in absence of play, sits in researcher's lap, talks with mother about toys at home
Unengaged with toys: Passive Behavior	Passive behavior that is not part of play scheme	Stares into space, wanders aimlessly, rolls back and forth on rug, sucks thumb and stares

Note. Adapted from ''The effects of developmental delay on sustained attention in young children,'' by J. B. Krakow and C. B. Kopp, 1983, *Child Development, 54,* p. 1153.

play session into episodes of play and nonplay yielded a complete record of the child's play session on the coding protocol, thus accounting for every second of the child's time.

Determining nonplay activity. Nonplay episodes for each child were coded based on categories determined by Krakow and Kopp (1983). Nonplay activity was coded according to the following categories: (a) exploration of room, (b) social behavior, (c) passive behavior (see Table 2 for descriptions and examples of nonplay categories).

Passivity is defined as behavior that is not part of a play theme in which the child is inactive and self-absorbed. Examples from the category *unengaged with toys/passive* are ''stares into space,'' and ''wanders aimlessly'' (adapted from Krakow & Kopp, 1983). As with play episodes, nonplay episodes were not interrupted by the mother or the researchers. Therefore, the child returned to the activity after every passive episode, regardless of length. Termination of the entire play session was child initiated, unless the play session reached the 60-minute time limit. Thus, a passive episode was never interrupted to end the play session. Final episodes of the play session were coded as social behavior (e.g., engaging the mother or researcher to indicate play was finished) or exploration behavior (e.g., turning the doorknob), depending on the child's expression of the desire to terminate the session.

Interobserver agreement. Three observers, blind to the hypotheses of the study, were trained to code practice videotapes during six weekly training sessions. The training tapes were not used in the formal interobserver agreement calculations. Agreement was calculated for three variables: (a) episode length, (b) episode type (play, nonplay), and, (c) nonplay behavior (exploration, social, passive). Formal training began after the coders reached a minimum of 80% agreement with the authors during training. Twelve videotapes (40%) were randomly selected for use in the interobserver agreement calculation of episode length and type (play, nonplay). Six of the 12 videotapes were selected from the group of ''short players'' (i.e., those children who completed their play within 35 minutes) and 6 videotapes were selected from the group of ''long players'' (i.e., children who played for at least 47 minutes). Given the lower incidence of nonplay behaviors, agreement for nonplay behavior was calculated for the long-player group only. That is, the six videotapes used in the agreement calculation of nonplay behaviors (exploration, social activity, and passivity) were randomly selected from the group of long players. Equal numbers of children with and without Down syndrome were represented in the tapes selected for all calculations. One graduate student independently coded episode length, a second graduate student coded episode type (play, nonplay) and level of play, and a third student coded the occurrence of nonplay behavior. To compen-

sate for observer drift, the coders coded the tapes in a counterbalanced order. Agreement level was calculated as percentage of agreement (i.e., the ratio of the number of agreements to the total number of observations—agreements plus disagreements—multiplied by 100). Agreement averaged 92% for episode length, 98% for episode type (play, nonplay), 88% for passive behavior, 89% for exploration, and 89% for social behavior. These simple percentage agreements are commensurate with levels of agreement reported for these categories in similar studies (e.g., Hill & McCune-Nicolich, 1981; Krakow & Kopp, 1982, 1983) and fall above the generally accepted level of 80% (Gelfand & Hartman, 1975).

In addition to simple uncorrected percentage agreement, interobserver agreement was calculated using Cohen's kappa statistic (Cohen, 1960). This statistic corrects for chance agreement and thus produces lower values than percentage agreement statistics (Hartman, 1977). Kappa statistics were .72 for episode length, .94 for episode type, .72 for exploration, .73 for social behavior, and .69 for passive behavior. These more conservative statistics were also adequate, falling above the generally acceptable .60 level (Gelfand & Hartman, 1975) across all categories.

RESULTS

All subjects played for at least 30 minutes. After 30 minutes, the time at which children finished their play varied. Children with Down syndrome fell into two groups; short players ($n = 4$) and long players ($n = 10$). After 47 minutes, the 10 long players with Down syndrome discontinued play at a nearly uniform rate, until play for all children was stopped at 60 minutes. Unexpectedly, the numbers of typically developing children in the two groups were reversed; 10 children were short players, whereas 4 children fell into the long players group. Typically developing children first ended play at 33.4 minutes and the rate of discontinuation remained steady until play for all children was stopped at 60 minutes. In the analyses that follow, the maximum length for the play session was set at 47 minutes for both groups of children to ensure a reasonable sample size.

Analyses

Two distinct analyses were performed. First, to determine differences in passivity over an extended time period between children with Down syndrome and their typically developing mental-age-matched peers, between-group analysis was performed for the first 30 minutes of play. Second, to determine the trajectory of passivity for children with and without Down syndrome over the 47-minute play session, a within-group analysis by time was performed. The 47-minute play session was divided into equal time intervals and children with and without Down syndrome were compared on the total number of minutes in passivity during each interval. Alternative time intervals (1, 5, 10, and 15 minutes) were used for our initial analysis, but results were most significant for the 15-minute intervals. That is, differences were noticeable between blocks of time, though not minute by minute. Analyses were performed on the full sample of 28 subjects over the first two play periods of the play session (i.e., 0:01–15:40, 15:41–31:20), and on subsamples of the 10 children with Down syndrome and the 4 typically developing children who played during all three play periods (i.e., 0:01–15:40, 15:41–31:20, 31:21–47:00).

To test for differences in passivity between the children with and without Down syndrome, each child with Down syndrome was matched with his or her mental-age partner. Children in each mental-age-matched pair were compared on duration (time) and frequency (number) of passive episodes for the first 30 minutes of play. The mean and standard deviation of the differences in duration and frequency were then calculated for the 14 pairs (see Table 3). Similar calculations were performed for the duration and frequency of the nonplay categories of exploration and social behavior (see Table 3). The test for equality of means with unequal variances (the Behrens-Fisher problem) as proposed by Scheffé (1943), was used to compare children with Down syndrome and their typically develop-

Table 3.

Means and Standard Deviations for Differences Between Children With and Without Down Syndrome in Duration and Frequency of Nonplay During 30 Minutes of the Play Period

	Down Syndrome (n = 14)	Typically Developing (n = 14)	Difference*
Duration			
Passivity	.99	.04	.95
	(2.58)	(.06)	S = 1.37; Cohen's d = .72
Exploration	1.56	1.56	0
	(1.88)	(2.60)	S = 0; Cohen's d = 0
Social	1.98	1.51	.47
	(3.11)	(2.07)	S = .43; Cohen's d = .18
Frequency			
Passivity	1.30	.43	.87
	(2.27)	(.56)	S = 1.19; Cohen's d = .62
Exploration	1.00	1.43	−.43
	(1.18)	(2.14)	S = .63; Cohen's d = .26
Social	1.36	.71	.65
	(1.82)	(1.16)	S = 1.50; Cohen's d = .44

Note. Time is expressed in minutes and hundredths of a minute. Numbers in parentheses are standard deviations.
*Critical Value $S > 2.16$ (n = 14, df = 13, $p < .05$).

ing mental-age-matched peers on time spent and total number of episodes of passivity, exploration, and social behavior. This Scheffé test has two attractive properties: (a) the test is based on the *t* distribution, and (b) the test statistic is distributed independent of the variances of the samples of children with and without Down syndrome (Lindgren, 1965). The Scheffé test statistics (*S*) and effect sizes are reported in Table 3.

The largest differences between the two groups were found in passivity (duration and frequency). The 14 children with Down syndrome spent an average of .99 minutes (SD = 2.58) in passivity, whereas the typically developing children spent an average of only .04 minutes (SD = .06) in passivity. The children with Down syndrome showed a wide variation of time in passive behavior (range = 0–9.81 minutes), whereas the typically developing children showed little variation (range = 0–.17 minutes) in passive behavior. Similar variation between the samples was observed for the number of distinct episodes of passive behavior. Children with Down syndrome had an average of 1.30 passive episodes (range = 0–8 episodes), whereas typically developing children had an average of .43 episodes (range = 0–2 episodes). No statistically significant differences were found in duration or frequency of exploration, or duration of social activity. Finally, children with Down syndrome interrupted play more often to engage in social behavior than their typically developing mental-age-matched peers. Children with Down syndrome had an average of 1.36 social episodes (range = 0–8), and typically developing children had an average of .71 social episodes (range = 0–4).

With 13 degrees of freedom, values of the *t* distribution obtained with the Scheffé test must exceed 2.16 to indicate a statistically significant difference in means at the usual level of $p < .05$. None of the observed differences reported here can be considered statistically significant by this standard. Nonetheless, effect sizes indicate that the measured differences might still be noteworthy. Cohen's *d* value of *effect size* provides a measure of the relative importance of the observed differences by comparing the mean differences between population subgroups to the pooled standard deviation of the groups. Values of Cohen's *d* near .2 represent a relatively small

Table 4.
Mean Time and Standard Deviations in Passivity for Children With and Without Down Syndrome by Play Period

	Down Syndrome		Typically Developing	
	Short Players (n = 14)	Long Players (n = 10)	Short Players (n = 14)	Long Players (n = 4)
1st play period	.17 (.36)	.24 (.40)	.03 (.05)	.03 (.03)
2nd play period	.83 (2.34)	1.09 (2.76)	.01 (.02)	.02 (.02)
3rd play period	—	2.45 (3.80)	—	0 (0)

Note. Time in passivity is expressed in minutes and hundredths of a minute. Numbers in parentheses are standard deviations.

effect size, whereas values near .5 and .8 are considered medium and large effect sizes, respectively (Kirk, 1990). The *d* values for time in passivity and number of passive episodes equaled .72 and .62, respectively, and indicated that, on average, the duration and frequency of passivity of children with Down syndrome differed from that of children without Down syndrome by more than 1/2 of the standard deviations of duration and frequency in the full sample (see Table 3).

Finally, we examined whether children with Down syndrome who had lower mental ages were also more passive. A post-hoc regression analysis revealed that the duration of passive behavior for children with Down syndrome was, in fact, negatively correlated with mental age ($R = -.10$). The magnitude of this association ($R^2 = .01$) was not deemed noteworthy.

Table 4 presents the time pattern of passivity within the samples of children with and without Down syndrome. For this analysis, the 47-minute play period was divided into three equal time segments of 15.67 minutes each. Patterns are described for all children in both samples during the first and second 15.67-minute play periods, and for the first, second, and third play periods for the subsamples (Down syndrome, $n = 10$; Typically developing, $n = 4$) of children who played for a longer 47-minute play period. Mean time spent in passivity increased from the first play period to the second play period for all 14 children with Down syndrome. Mean time spent in passivity also increased from the second to the third play period for the subsample of 10 children with Down syndrome. For typically developing children, time spent in passivity decreased from the first play period to the second play period, although it must be noted that time spent in passivity in both periods was minimal. No passivity was exhibited by the 4 remaining typically developing children during the third play period.

Using the Scheffé test again, the full sample of children with Down syndrome and the full sample of children without Down syndrome were compared on the observed mean change in passive behavior from the first 15.67 minutes of play to the second 15.67 minutes of play (see Table 5). For children with Down syndrome, the Scheffé test statistic was $S(13) = 1.12$, indicating a positive increase in passivity over time, although the observed difference for this sample of 14 mental-age-matched pairs was not statistically significant at the usual critical value ($p < .05$). For children without Down syndrome, the test statistic was $S(13) = -1.41$, indicating a decrease, but not a statistically significant decline ($p < .05$) in passivity. Statistical comparisons for three play periods for the subsample of the 10 children with Down syndrome and for the 4 children without Down syndrome who played for 47 minutes revealed similar results (see Table 5). Although not statistically significant, the largest differences were found between passivity displayed in the first and third play periods, again with passivity increasing for children with Down syndrome and decreasing for the typically developing children.

Cohen's *d* values, measuring effect size, also showed that the observed differences over time for the children with Down syndrome were noteworthy; particularly between the first and third play periods. Specifically, the value of Cohen's *d* comparing the first and third play periods (see Table 5) indicated that, on average, the difference in duration of pas-

Table 5.
Scheffé and Cohen's d for Comparisons of Time in Passivity Between Play Periods for Children With and Without Down Syndrome

	Down Syndrome		Typically Developing	
Play Periods Compared	Short Players (n = 14)[a]	Long Players (n = 10)[b]	Short Players (n = 14)[a]	Long Players (n = 4)[c]
1st (0:00–15:40) vs.	1.12	1.01	−1.41	−1.49
2nd (15:41–31:20)	(.48)	(.54)	(.75)	(.54)
2nd (15.41–31.20) vs.	—	.89	—	−1.67
3rd (31:20–47:00)		(.41)		(1.91)
1st (0:00–15:40) vs.	—	1.68	—	−1.73
3rd (31:20–47:00)		(.71)		(2.12)

Note. Cohen's *d* is presented in parentheses.
[a]Critical Value $S > 2.16$ (n = 14, df = 13, $p < .05$).
[b]Critical Value $S > 2.26$ (n = 10, df = 9, $p < .05$).
[c]Critical Value $S > 3.18$ (n = 4, df = 3, $p < .05$).

sivity of children with and without Down syndrome equaled .71 of the overall standard deviation of the full sample. This is generally considered a medium effect size (Kirk, 1990). Expressed in percentages, these 10 children with Down syndrome spent an average of 2% of the first play period in passive behavior, compared to 16% of the play session during the third play period.

DISCUSSION

Our initial finding was that during extended free play children with Down syndrome were distinguishable from their typically developing mental-age-matched peers in duration and frequency of passive behavior. Children with Down syndrome spent more time in passive behavior and shifted from play to passivity and back to play more often than did the typically developing children over the first 30 minutes of the play period. These findings confirm and extend earlier results of Krakow and Kopp (1982, 1983) that children with Down syndrome are more passive during play than children without Down syndrome. Unlike their results, we did not find a difference between the samples for the time spent in social behavior, but in our study children with Down syndrome exhibited greater frequency of social behavior, a variable not measured in the Krakow and Kopp studies. Perhaps this more frequent social contact provides the child with Down syndrome the ''emotional refueling'' that typically developing children gain in more subtle ways, for example, through more frequent glances to caregivers. The result is the fluid, integrated play that, according to Krakow and Kopp, qualitatively differentiates the play of children with and without Down syndrome.

Our second finding was that children with Down syndrome spent more time in passivity as time progressed over a 47-minute play period, whereas typically developing children at the same developmental age showed a decline in time in passivity as the play period progressed. We know from Krakow and Kopp (1982, 1983), that differences emerge over shorter, time-limited play periods. We now know from this research that differences between groups of children with and without Down syndrome continue over extended play periods. We conclude that the need to disengage from play does not self-correct. Qualitative differences in nonplay continue over time resulting in play less fluid and less efficient than that of typically developing mental-age-matched peers.

An important consideration when interpreting these findings and those of our earlier study of repetition, is that results are based solely on frequency and duration data. The constructs of passivity, repetition, and play

might have different meanings across and within the groups of children studied here. For example, even though children with and without Down syndrome spent similar amounts of time in play, 86% and 89% respectively, the quantity of their play does not necessarily equate with the quality of their play. Similarly, equal time spent in passivity or equal number of passive episodes might not necessarily imply that the children were expressing similar states—the two samples might display physical or cognitive depletion in different ways. That is, being ''played out'' might appear as different, or might have a different meaning for children with and without Down syndrome. Children with Down syndrome might express fatigue by sitting passively, whereas the same state might be expressed more actively—through exploration of the environment, or indication that they want to end the session—in typically developing children. Alternatively, sitting passively might indicate that typically developing children are bored, whereas children with Down syndrome might become more active in the same state. Given the qualitative differences we know exist in play engagement, it is possible that disengagement from play differs qualitatively as well.

In addition to differences between children with and without Down syndrome on measures of passivity, important differences emerged within the sample of children with Down syndrome. The large variance in passivity for these children is of interest in its own right. In our sample of 14 children, 4 children (29%) with Down syndrome spent over 19% of their play session in passive behavior, whereas some children from this sample engaged in no passive behavior at all during the entire 47 minutes. In addition, examination of the group of long players with Down syndrome, revealed that they become more heterogeneous over time, as evidenced by the large standard deviations.

The first finding that children with and without Down syndrome differed on measures of passive behavior confirms passivity as a distinguishing characteristic of *some,* but certainly not *all,* children with Down syndrome. The second finding that for some children passivity increased over time in a self-directed activity raises provocative questions about the role of passivity in the functioning of children with Down syndrome. As a result of this study, we know that for some children with Down syndrome, but again not for all, passivity has a cumulative effect. At this point, conjecture about the purpose passivity serves over time is speculative. If passivity signaled satiation in children with Down syndrome, it would increase for *all* children before completing their play—in this study it did not. Therefore, we conclude that passivity must serve a specific purpose for *some* children with Down syndrome. One interpretation is that passivity might not signal a need for immediate redirection, but rather a need for a break from activity (Cherkes-Julkowski & Gertner, 1989), thus enabling children to refuel cognitively or physically before reengaging in activity. Furthermore, breaks from play might help the child with mental retardation regulate stimuli and activity, and maintain a self-directed, productive pace overall. Another factor to be considered is that these children with Down syndrome might have learned through parent and school interactions that direction will follow when they hesitate (Cardoso-Martins & Mervis, 1985; Goodman, 1992; Jobling, 1988). When that direction is not available, as in this study, the result might be withdrawal into passive behavior, at least for some children with Down syndrome. Regardless of motivation, passivity might not always signal the need for immediate adult intervention. Waiting out a passive episode might result in a self-driven choice. This is illustrated by the following anecdote from this study.

> Elaine has been playing independently for 30 minutes, most recently animating the figures. She gathers the toys into a pile, attempts to gain her mother's attention, and sits passively against the wall, staring into space when told, ''Mommy's busy.'' After 2.5 minutes of passive behavior, Elaine looks at her mother, briefly pushes a truck, and then becomes engaged in a 4.5-minute sequence of diapering the doll.

Had Elaine's passive behavior been interrupt-

ed, she would not have been given the time to refuel and generate a new play scheme. This opportunity for her to demonstrate initiative and to experience competence would have been lost.

Taken together, our studies of passivity and repetition (Lender, Goodman, & Linn, 1998) offer a complex picture of behaviors considered characteristic of and problematic for children with Down syndrome. First, these studies validate the perception that children with Down syndrome *do* engage in more passive and repetitive behavior. It is important to remember, however, that despite higher frequencies of these distinguishing behaviors, children with Down syndrome spent the majority of their time engaged in spontaneous, nonrepetitive play. In addition, children in both studies ended these behaviors without adult intervention. Parental and professional perception of children getting stuck in ''endless'' bouts of passivity or cycles of repetitive play might be exaggerated. Second, both behaviors reflect the more deliberate, less fluid processing style of children with Down syndrome. Typically developing children might be able to assimilate information in their first play sequence; children with Down syndrome might need more practice through repetition. Similarly, typically developing children might refuel through subtle glances to their caregiver; children with Down syndrome might need to stop their play and interact or disengage from activity altogether in a more deliberate way.

Because all children in this study spent the majority of their time in play activity, an important expansion of our results on passivity and repetitive play is to examine the ''positive'' aspects of play—that is, the quantity and quality of the child's active, cognitively rich engagement in the play environment. Comparisons of play (duration and level) and nonplay will yield a more complete picture of the attributes of all children.

The next steps into specific research on passivity and play are, first, to replicate our experiment with more children, to establish that our results meet usual standards of statistical significance within an appropriately larger sample design. A larger sample will allow smaller standard errors of estimation and permit a sharper test of the hypotheses at issue. Given the need to evaluate in detail each child's play session, however, experiments such as ours are necessarily expensive. It is encouraging to note that the methodology of Kirk (1990) for experimental design suggests that sample sizes of 40 children or more should be sufficient to observe the effect size differences reported in Tables 3 and 5 at usual standards of statistical significance. These conclusions must be interpreted within the context of the nature of this study—a play room in an unfamiliar early intervention center, with strangers videotaping. It is equally important to test our results in a natural setting. To increase the likelihood that the results reported here reflect typical play behavior in a school setting, where play is often interrupted or supported by other children and where adults are available for help, it is necessary to move to the inclusive preschool or early intervention classroom to observe, measure, and statistically test play behaviors.

Educational Implications

We are not suggesting that the child with developmental delays be permitted to sit and stare blankly for 10 minutes. Rather, we propose the use of carefully constructed and sensitively monitored play environments, to encourage sustained initiative and active investment for children with Down syndrome. They, like all children, need to find that the demands of a task match their interests and comfort level (Bricker, 1992). We know from this study, however, that even in these environments bouts of passivity might occur for some children and might increase with the longer play periods advocated by early childhood educators. This is not a clear indication that the child has reached the state of being ''played out.'' Results indicate that there is no one magic moment when children lose interest in their play activity. Therefore, responding to passivity requires respect for and sensitivity to the individual child, combined with knowledge of that fine line between responsiveness and intrusion (File & Kontos, 1993).

Combining the results reported here with

earlier results from this sample (Lender, Goodman, & Linn, 1998), suggests a need to reexamine the puzzling passive and repetitive behaviors of children with Down syndrome. Based upon our initial results, both studies suggest the need for caution before intervening in the child-directed activities of children with Down syndrome. First, when possible, educators should observe behaviors in play carefully (i.e., when they occur, how long they occur, and what follows their occurrence), and question the purpose the behavior serves and the consequences of adult intervention. Second, intervention should be child-centered. For example, when a teacher slips a figure into a truck previously used by a now passive child, pushes it into the child's range of vision, and waits a few moments for a response, she is intervening in the child's zone of proximal development (Vygotsky, 1978); scaffolding on the play by introducing a variation of his ''truck'' theme, *and* respecting the child's rhythm of activity. Such sensitive involvement does not shift initiative, interest, or control from child to the adult, but rather demonstrates respect for the child and his unique learning style. In expressing concern over the diminishing initiative displayed by children with Down syndrome, Wishart (1996) stated, ''We need to establish how we can best support their efforts to learn without creating a child-teacher partnership in which the child is able to relinquish much of the learning initiative to others'' (p. 199). Until we know more about the meaning of passivity and repetition in children with mental retardation, we are suggesting that educators consider these behaviors as a signal of the child's need for adult control, not an absolute indicator. As with all signals, one must know the abilities and needs of the child to interpret its meaning. Educators must be mindful that the same behavior may have different meanings for different children. At times the teacher might choose to wait out a passive episode, as with Elaine, but at other times sensitive intervention might be the more appropriate choice.

Passivity is not a universal response of all children with Down syndrome, and it might not signal the same meaning for each child. However, there are specific children for whom passivity is a natural, and perhaps necessary, response to a stimulating situation. Based on the preliminary results reported here, we are suggesting that educators intervene with care, at least until we know with greater certainty the multiple purposes passivity might serve.

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Address correspondence to **Margaret Inman Linn,** Widener University, Center for Education, One University Place, Chester, Pennsylvania 19013. *E-mail: margaret.i.linn@widener.edu*